WHAT IS CLAIMED IS:

1. A pressed-contact type semiconductor device comprising:

a first conductivity type of semiconductor substrate;

a first diffusion layer formed by diffusing a second conductivity type of impurities on a first side of the semiconductor substrate;

a fourth diffusion layer formed by diffusing a first conductivity type of impurities on the first side of the semiconductor substrate so as to be shallower than the first diffusion layer;

a gate electrode provided on the first side of the semiconductor substrate so as to be in contact with the first diffusion layer;

a first electrode provided on the first side of the semiconductor substrate so as to be in contact with the fourth diffusion layer;

a second diffusion layer formed by diffusing the second conductivity type impurities on a second side of the semiconductor substrate; and

a second electrode provided on the second side of the semiconductor substrate so as to be in contact with the second diffusion layer;

wherein a depth D1 of the first diffusion layer and a depth D2 of the second diffusion layer have a relation of

D1 > D2.

2. A pressed-contact type semiconductor device comprising:

a first conductivity type of semiconductor substrate;

a first diffusion layer formed by diffusing a second conductivity type of impurities on a first side of the semiconductor substrate;

a fourth diffusion layer formed by diffusing a first conductivity type of impurities on the first side of the semiconductor substrate so as to be shallower than the first diffusion layer;

a gate electrode provided on the first side of the semiconductor substrate so as to be in contact with the first diffusion layer;

a first electrode provided on the first side of the semiconductor substrate so as to be in contact with the fourth diffusion layer;

a second diffusion layer locally formed by diffusing the second conductivity type of impurities on a second side of the semiconductor substrate so as to be exposed on a lateral side of the substrate;

a third diffusion layer locally formed by diffusing the second conductivity type of impurities on the second side of the semiconductor substrate so as not to be exposed on the lateral side of the substrate; and

a second electrode provided on the second side of the semiconductor substrate so as to be in contact with the third diffusion layer;

wherein a depth D2 of the second diffusion layer and a depth D3 of the third diffusion layer have a relation of D2 > D3.

3. A pressed-contact type semiconductor device comprising:

a first conductivity type of semiconductor substrate;

a first diffusion layer formed by diffusing a second conductivity type of impurities on a first side of the semiconductor substrate;

a fourth diffusion layer formed by diffusing a first conductivity type of impurities on the first side of the semiconductor substrate so as to be shallower than the first diffusion layer;

a gate electrode provided on the first side of the semiconductor substrate so as to be in contact with the first diffusion layer;

a first electrode provided on the first side of the semiconductor substrate so as to be in contact with the fourth diffusion layer;

a second diffusion layer locally formed by diffusing the second conductivity type of impurities on a second side of the semiconductor substrate so as to be exposed on a

lateral side of the substrate;

a third diffusion layer locally formed by diffusing the second conductivity type of impurities on the second side of the semiconductor substrate so as not to be exposed on the lateral side of the substrate; and

a second electrode provided on the second side of the semiconductor substrate so as to be in contact with the third diffusion layer;

wherein a depth D1 of the first diffusion layer, a depth D2 of the second diffusion layer and a depth D3 of the third diffusion layer have a relation of D1 > D2 > D3.

4. The pressed-contact type semiconductor device according to claim 2, wherein a carrier concentration of the second diffusion layer and a carrier concentration of the third diffusion layer are different from each other.

5. The pressed-contact type semiconductor device according to claim 3, wherein a carrier concentration of the second diffusion layer and a carrier concentration of the third diffusion layer are different from each other.

6. A pressed-contact type semiconductor device comprising:

a first conductivity type of semiconductor substrate;

a first diffusion layer formed by diffusing a second conductivity type of impurities on a first side of the semiconductor substrate;

a fourth diffusion layer formed by diffusing a first conductivity type of impurities on the first side of the semiconductor substrate so as to be shallower than the first diffusion layer;

a gate electrode provided on the first side of the semiconductor substrate so as to be in contact with the first diffusion layer;

a first electrode provided on the first side of the semiconductor substrate so as to be in contact with the fourth diffusion layer;

a second diffusion layer locally formed by diffusing the second conductivity type of impurities on a second side of the semiconductor substrate so as to be exposed on a lateral side of the substrate;

a third diffusion layer locally formed by diffusing the second conductivity type of impurities on the second side of the semiconductor substrate so as not to be exposed on the lateral side of the substrate; and

a second electrode provided on the second side of the semiconductor substrate so as to be in contact with the third diffusion layer;

wherein a plurality of lifetime control regions each having a lifetime shorter than that of the semiconductor substrate are formed inside the semiconductor substrate so as to be substantially parallel to the substrate surface,

and a first lifetime control region which is most close to the second and third diffusion layers has a lifetime shorter than that of a second lifetime control region which is secondly close to the second and third diffusion layers.

7. The pressed-contact type semiconductor device according to claim 6, wherein the first lifetime control region which is most close to the second and third diffusion layers has the shortest lifetime among the lifetime control regions.

8. The pressed-contact type semiconductor device according to claim 7, wherein three lifetime control regions each having a lifetime shorter than the semiconductor substrate are formed inside the semiconductor substrate, and a lifetime $\tau 1$ of the first lifetime control region which is most close to the second and third diffusion layers, a lifetime $\tau 2$ of the second lifetime control region which is secondly close to those layers and a lifetime $\tau 3$ of the third lifetime control region which is thirdly close to those layers have a relation of $\tau 1 < \tau 2 < \tau 3$.

9. A pressed-contact type semiconductor device comprising:

a first conductivity type of semiconductor substrate;

a first diffusion layer formed by diffusing a second conductivity type of impurities on a first side of the

semiconductor substrate;

a fourth diffusion layer formed by diffusing a first conductivity type of impurities on the first side of the semiconductor substrate so as to be shallower than the first diffusion layer;

a gate electrode provided on the first side of the semiconductor substrate so as to be in contact with the first diffusion layer;

a first electrode provided on the first side of the semiconductor substrate so as to be in contact with the fourth diffusion layer;

a second diffusion layer locally formed by diffusing the second conductivity type of impurities on a second side of the semiconductor substrate so as to be exposed on a lateral side of the substrate;

a third diffusion layer locally formed by diffusing the second conductivity type of impurities on the second side of the semiconductor substrate so as not to be exposed on the lateral side of the substrate; and

a second electrode provided on the second side of the semiconductor substrate so as to be in contact with the third diffusion layer;

wherein a lifetime control region having a lifetime shorter than that of the semiconductor substrate is formed at a periphery along the lateral side of the substrate, and

an internal interface of the lifetime control region is provided inward from a portion where the internal interface of the second diffusion layer and the internal interface of the third diffusion layer intersect with each other.

10. The pressed-contact type semiconductor device according to claim 9, wherein a bevel surface is formed along the lateral side of the semiconductor substrate, and the portion where the internal interface of the second diffusion layer and the internal interface of the third diffusion layer intersect with each other is provided inward from the most inner diameter of the bevel surface.

11. The pressed-contact type semiconductor device according to claim 9, wherein the portion where the internal interface of the second diffusion layer and the internal interface of the third diffusion layer intersect with each other is disposed outward from the most outer diameter of the second electrode.

12. The pressed-contact type semiconductor device according to claim 10, wherein the portion where the internal interface of the second diffusion layer and the internal interface of the third diffusion layer intersect with each other is disposed outward from the most outer diameter of the second electrode.

13. The pressed-contact type semiconductor device according to claim 9, wherein a bevel surface is formed

along the lateral side of the substrate, and a most inner diameter Fb of the bevel surface, a diameter Eb of the portion where the internal interface of the second diffusion layer and the internal interface of the third diffusion layer intersect with each other, a most outer diameter Ea of the second electrode and a most inner diameter Fa of the internal interface of the lifetime control region have a relation of Fb > Eb > Ea > Fa.

14. The pressed-contact type semiconductor device according to claim 9, wherein the diameter Eb of thr portion where the internal interface of the second diffusion layer and the internal interface of the third diffusion layer intersect with each other, the most outer diameter Ea of the second electrode and the depth D2 of the second diffusion layer have a relation of Eb - Ea > 2 x D2.

15. The pressed-contact type semiconductor device according to claim 9, wherein the diameter Eb of a portion where the internal interface of the second diffusion layer and the internal interface of the third diffusion layer intersect with each other, a most outer diameter Ec of the fourth diffusion layer and a distance D5 between the internal interface of the first diffusion layer and the internal interface of the third diffusion layer have a relation of Ec < Eb - D5.